WHAT IS CLAIMED IS:

1. A method for fabricating a semiconductor device comprising the steps of:

forming a film containing a silicon above a semiconductor substrate;

removing a natural oxide film on the surface of the film;

forming an oxide film on the surface of the film with the natural oxide film removed;

forming a mask on the oxide film formed on the surface of the film; and

etching the film with the mask to form a gate electrode including the film.

2. A method for fabricating a semiconductor device comprising the steps of:

forming a film containing a silicon above a semiconductor substrate with a gate insulation film formed therebetween;

exposing the semiconductor substrate to the atmosphere;

removing a natural oxide film formed on the surface of the film;

forming an oxide film on the surface of the film with the natural oxide film removed;

forming a mask on the oxide film formed on the surface of the film; and

etching the film with the mask to form a gate electrode including the film.

3. A method for fabricating a semiconductor device according to claim 1, further comprising, after the step of forming the mask, the step of

etching the oxide film with the mask.

4. A method for fabricating a semiconductor device according to claim 2, further comprising, after the step of forming the mask, the step of

etching the oxide film with the mask.

5. A method for fabricating a semiconductor device according to claim 1, wherein

In the step of forming the oxide film, the surface of the film is oxidized with an oxidizing chemical liquid to form the oxide film on the surface of the film.

6. A method for fabricating a semiconductor device according to claim 2, wherein

In the step of forming the oxide film, the surface of the film is oxidized with an oxidizing chemical liquid to form the oxide film on the surface of the film.

7. A method for fabricating a semiconductor device according to claim 5, wherein

the oxidizing chemical liquid is HPM, SPM, aqueous solution of ozone or nitric acid.

8. A method for fabricating a semiconductor device according to claim 6, wherein

the oxidizing chemical liquid is HPM, SPM, aqueous solution of ozone or nitric acid.

9. A method for fabricating a semiconductor device according to claim 1, wherein

in the step of forming the oxide film, the surface of the film is exposed to oxygen plasmas, oxidizing the surface of the film to thereby form the oxide film on the surface of the film.

10. A method for fabricating a semiconductor device according to claim 2, wherein

in the step of forming the oxide film, the surface of the film is exposed to oxygen plasmas, oxidizing the surface of the film to thereby form the oxide film on the surface of the film.

11. A method for fabricating a semiconductor device according to claim 1, wherein

in the step of removing the natural oxide film, the natural oxide film is removed by hydrofluoric acid processing.

12. A method for fabricating a semiconductor device according to claim 2, wherein

in the step of removing the natural oxide film, the natural oxide film is removed by hydrofluoric acid processing.

13. A method for fabricating a semiconductor device according to claim 1, further comprising, before the step

of removing the natural oxide film, the step of

removing foreign objects adhering to the surface of the film.

14. A method for fabricating a semiconductor device according to claim 2, further comprising, before the step of removing the natural oxide film, the step of

removing foreign objects adhering to the surface of the film.

15. A method for fabricating a semiconductor device according to claim 13, wherein

in the step of removing the foreign objects, the surface of the film is cleaned with APM to remove the foreign objects adhering to the surface of the film.

16. A method for fabricating a semiconductor device according to claim 14, wherein

in the step of removing the foreign objects, the surface of the film is cleaned with APM to remove the foreign objects adhering to the surface of the film.

17. A method for fabricating a semiconductor device comprising the steps of:

forming a film containing a silicon above a semiconductor substrate;

forming a mask on the film without exposing the surface of the film to the atmosphere; and

etching the film with the mask to form a gate electrode including the film.

18. A method for fabricating a semiconductor device comprising the steps of:

forming a film containing a silicon above a semiconductor substrate;

forming an oxide film on the surface of the film without exposing the surface of the film to the atmosphere;

forming a film to be a mask on the oxide film formed on the surface of the film;

forming a resist film on the film to be the mask and exposing and developing the resist film with exposure light having a wavelength of 200 nm or below to form a resist pattern;

patterning the film to be the mask with the resist pattern to form the mask; and

etching the film with the mask to form a gate electrode including the film.

19. A method for fabricating a semiconductor device according to claim 1, wherein

the film is a polysilicon film, an amorphous silicon film or a silicon germanium film.

20. A method for fabricating a semiconductor device according to claim 2, wherein

the film is a polysilicon film, an amorphous silicon film or a silicon germanium film.